Biotechnology: Detection and Destruction of Pathogens

Session Organizers:
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The sustenance of life as we know it depends on the complex interaction of different species. Pathogens, or agents that cause disease, are a necessity in any viable ecosystem. Pathogens can be living (such as bacterial or fungal), non-living (such as prion proteins) or somewhere in between (such as viruses). Given the propensity of pathogens to cause human suffering and even alter the course of entire economies (HIV and SARS, for example), there has always been a need to identify the causative agents of disease and whenever possible destroy them. Rapid detection of an unknown biologically active agent is complex and there is an absolute requirement for novel approaches. The emergence of bioterrorism as a now utilized threat has made rapid detection and destruction even more important. This session will describe how nanotechnology can be used to make pathogen identification fast, precise and accurate. In the context of bioterrorism, the destruction of pathogens is now more important than ever and this session will summarize how far we have come in our understanding of toxicology in order to be able to destroy biowarfare agents when needed. One of the least understood classes of pathogens are the prion proteins. These inanimate protein molecules have the ability to induce devastating diseases. The identification and potential destruction of prion proteins will be a particular focus of this session.